Paper No. 49

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte SETSUO NAKAJIMA, YASUYUKI ARAI,
HISATO SHINOHARA, and MASAYOSHI ABE

Appeal No. 2003-0456
Application No. 09/149,289

HEARD: July 17, 2003

Before HAIRSTON, BARRETT, and BARRY, *Administrative Patent Judges*.

BARRY, *Administrative Patent Judge*.

DECISION ON APPEAL

A patent examiner rejected claims 1-12 and 17-33. The appellants appeal therefrom under 35 U.S.C. § 134(a). We reverse.

BACKGROUND

The invention at issue on appeal is a photoelectric conversion device, such as a solar cell, employing a substrate made of a flexible, organic material. According to the appellants, the organic material features "high workability," (Spec. at 1), and is lighter than metal. (*Id.* at 2.)

After a photoelectric conversion device is fabricated, output leads must be provided. Conventionally, such leads are connected to electrodes of the device by soldering. Because a substrate made of the aforementioned material suffers from a "poor thermal resistance," (*id.*), however, the appellants explain that heat applied during the soldering deforms the substrate. (*Id.* at 2-3.)

In contrast, the appellants use an epoxy resin to bond output leads to their device "independent of electrical connection of the leads with electrodes of the device." (*Id.* at 6.) Consequently, they assert, "a sufficient bonding strength is accomplished without applying high temperature locally." (*Id.* at 6.)

A further understanding of the invention can be achieved by reading the following claim.

> 9. A method of manufacturing a photoelectric conversion device comprising:
>
> preparing a substrate having a front surface and a rear surface wherein said substrate comprises an organic material;
>
> forming a first electrode on said front surface of the substrate;
>
> forming a semiconductor layer on said first electrode;
>
> forming a second electrode on said semiconductor layer;
>
> forming at least one hole through said substrate and through said semiconductor layer;

forming at least one output terminal on the rear surface of the substrate;

forming a conductor over said second electrode and into said hole wherein one of said first and second electrodes is electrically connected with said output terminal through said conductor.

Claims 1-8 and 17-20, 22, 24-27, 29, 31, and 32 stand rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 4,965,655 ("Grimmer"); U.S. Patent No. 4,754,544 ("Hanak"); and U.S. Patent No. 5,296,043 ("Kawakami"). Claims 21, 23, 28, and 30 stand rejected under § 103(a) as obvious over Grimmer; Hanak; Kawakami; and U.S. Patent No. 5,259,891 ("Matsuyama").

OPINION

Rather than reiterate the positions of the examiner or the appellants *in toto*, we address the main point of contention therebetween. Admitting that Grimmer "do[es] not show opening at least one hole through the common substrate and do[es] not show forming an output terminal on the rear surface," (Examiner's Answer at 3), the examiner concludes, "[i]t would have been obvious to modify the Grimmer et al. methods to include the steps of forming the via taught by Hanak, as improved by Kawakami et al. to provide a method for contacting the device that would not interfere with the front surface of the device." (*Id.* at 4.) He asserts, "for a device that is intended to react to incident light, it is necessary to insure that no obstructions to such light are provided . . .

both Hanek [sic] and Kawakami et al. note the importance of this fact. " (*Id.*) The appellants argue, "[t]he rejection fails to provide a sufficient rationale to support that one of skill in the art would have been motivated to combine and modify the prior art of record to achieve the present invention." (Reply Br. at 1.)

"It is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious." *In re Fritch*, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992) (citing *In re Gorman*, 933 F.2d 982, 987, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991)). "[T]o establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicants." *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1316 (Fed. Cir. 2000) (citing *In re Dance*, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998); *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984)). "[T]he factual inquiry whether to combine references must be thorough and searching." *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351-52, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001). The inquiry cannot "be resolved on subjective belief and unknown authority," *In re Lee*, 277 F.3d 1338, 1343-44, 61 USPQ2d 1430, 1434 (Fed. Cir. 2002); "[i]t must be based on objective evidence of record." *Id.* at 1343, 61 USPQ2d at 1434.

Here, Hanak does not support the examiner's assertion that, "for a device that is intended to react to incident light, it is necessary to insure that **no** obstructions to such light are provided. . . ." (Examiner's Answer at 4 (emphasis added).) To the contrary, the reference discloses that its "arrays of interconnected semiconductor devices such as photovoltaic cells," col. 1, ll. 11-12, can operate with some obstructions to light. As admitted by the examiner, "Hanak shows that finger 9 obscures . . . a small fraction of the top surface (column 6, line 8)." (*Id.*) Figure 6A of the reference confirms the admission by showing "three fingers 149 extending over each island 131 of conductive material 125. . . " Col. 10, ll. 3-4.

Neither does Kawakami support the examiner's assertion. To the contrary, the examiner admits that the reference merely states "that there must be provision for getting **sufficient** light through the top layer (column 11, line 11)." (*Id.* (emphasis added)). Allowing sufficient light is not tantamount to removing **all** obstructions. As aforementioned, Hanak evidences that solar cells can receive sufficient light to operate when partially obstructed from light. Rather than forming some combination of Grimmer, Hanak, and Kawakami, moreover, the aforementioned teachings of Hanak and Kawakami easily could have lead one of skill in the art to "merely practice the device taught by Kawakami," (Reply Br. at 1), or that taught by Hanak.

Assuming *arguendo* that objective evidence of record would have suggested combining teachings of Grimmer, Hanak, and Kawakami, numerous combinations were possible. We are unpersuaded that one of ordinary skill in the art would have made the specific combination that was made by the appellants. The examiner fails to allege, let alone show, that the addition of Matsuyama cures the aforementioned deficiency. Therefore, we reverse the obviousness rejection of claims 1-12 and 17-33.

CONCLUSION

In summary, the rejection of claims 1-12 and 17-33 under § 103(a) is reversed.

REVERSED

KENNETH W. HAIRSTON Administrative Patent Judge	)
LEE E. BARRETT Administrative Patent Judge	) BOARD OF PATENT) APPEALS) AND) INTERFERENCES
LANCE LEONARD BARRY Administrative Patent Judge	)

ERIC ROBINSON
PMB 955
21010 SOUTHBANK ST.
POTOMAC FALLS, VA 20165